J.R. Simplot Company
P.O. Box 912,
Pocatello, Idaho 83204

208 235-5600 Business

June 29, 2020

Arthur Burbank
USDA Forest Service
4350 South Cliffs Dr.
Pocatello, ID 83204

Subject: Biological Selenium Removal Treatment Technology
Water Treatment Pilot Study
May 2020 Progress Report

Dear Art,

This progress report summarizes key activities in May 2020 associated with Phase 2 of the Water Treatment Pilot Study located near Hoopes Spring. This Pilot Study is being conducted as part of the Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) to provide information on the effectiveness of the active biological treatment system in removing selenium and other COPCs from South Fork Sage Creek Springs and Hoopes Spring.

Work related to the approved Phase 2 Pilot Study continues at the site in accordance with the Final *Phase 2 Pilot Study Work Plan and Sampling and Analysis Plan, Ultra-Filtration/Reverse Osmosis and Biological Selenium Removal Fluidized Bed Bioreactor Treatment Technology* (Phase 2 WP/SAP).

Identification of Deliverables and Data Transmittals

There were no outstanding deliverables or transmittals for the month of May. At the time of this report, we have received laboratory data for Weeks 117 and 119. Preliminary laboratory data are presented in Table 1. The field data for the Weeks 117 and 119 sampling events is summarized in Table 2.

Completed Activities

The following activities associated with the Phase 2 Pilot Study were completed in May 2020:

- Continued system operation and treatment of selenium.

The Treatment System Pilot (TSP) influent total selenium concentration for Week 117 was 166 ug/L and Week 119 was 160 ug/L. The Treatment System Pilot effluent total selenium concentration for Week 117 was 23.5 ug/L and Week 119 was 23.9 ug/L. The average removal efficiency for May was approximately 85% for total selenium removal.

The average flow of the TSP for the month of May was 1,339 gpm. The lower average flow this month has been caused by down time associated with difficulties with settlement of the biology in the post treatment system. Since full scale operations began in early December 2017 approximately 2.037 billion gallons of impacted water has been treated. The mass of selenium

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removed from December 2017 through May 2020 is approximately 2,120 pounds.

Upcoming Activities

The following activities associated with the Phase 2 Pilot Study are planned through June 2020:

- Continue system monitoring in accordance with the sampling and analysis plan.
- The approved iron co-precipitation pilot project is slated to begin in July 2021. The currently approved compliance sampling schedule will be utilized to collect the data. As data becomes available, it will be reported to the Forest Service in these monthly reports.

Please contact me if there are questions regarding this monthly progress report.

Sincerely,

Jeffrey Hamilton
Environmental Engineer

cc:

Arthur Burbank – USFS, 410 East Hooper, Soda Springs, ID 83276
Sherri Stumbo – USFS, 4350 South Cliffs Dr., Pocatello, ID 83204
Rick McCormick – Jacobs, email only
Doug Scott – Jacobs, email only
Ralph Oborn – IDEQ, email only
Brady Johnson – IDEQ, email only
Tracy Rita – IDEQ, email only
Colleen O'Hara – BLM, email only
Jennifer Crawford – USEPA, email only
Sandi Fisher – USFWS, email only
Ryan Braham – USFWS, 4425 Burley Dr., Suite A, Chubbuck, ID 83202
Kelly Wright –Shoshone-Bannock Tribes, P.O. Box 306, Fort Hall, ID 83203
Susan Hanson – (b) (6), Pocatello, ID 83202
Gary Billman – IDL, email only
Alan Prouty – J.R. Simplot Company, email only
Rachel Roskelley – J.R. Simplot Company, email only
Lori Lusty – J.R. Simplot Company, email only
Jon Witt – J.R. Simplot Company, email only
Dedra Williams – J.R. Simplot Company, email only
Chad Gentry – J.R. Simplot Company, email only
Ron Quinn – J.R. Simplot Company, email only
Delmer Cunningham – J.R. Simplot Company, email only
Andy Koulermos – Formation Environmental, email only
Lily Vagelatos – Formation Environmental, email only
Jeremy Aulbach – Brown and Caldwell, email only

Table 1
Laboratory Results Focused Analyte List

Hoopes Springs Water Treatment Plant Pilot Study
Phase 2, Performance Monitoring

		Week 117			Week 119		
Station >>		Influent	Ultra Filtration Backwash	Effluent	Influent	Ultra Filtration Backwash	Effluent
Sample ID >>		SC0520-LSSHS-IN001	SC0520-LSSHS-UFB001	SC0520-LSSHS-EF001	SC0520-LSSHS-IN002	SC0520-LSSHS-UFB002	SC0520-LSSHS-EF002
Date >>		5/13/2020			5/27/2020		
Analyte	**Units**						
General Chemistry							
Ammonia, as N	mg/L	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Biochemical Oxygen Demand	mg/L	2 U	2 U	2 U	2 U	2 U	2 U
TSS	mg/L	2 U	2 U	2 U	2 U	2 U	2 U
Nutrients							
Nitrate, as N	mg/L	0.45	0.2	0.68	0.37	0.27	0.55
Sulfide	mg/L	1 U	1 U	1 U	1 U	1 U	1 U
Phosphorus, Total	mg/L	0.0171	0.0329	0.107	0.022	0.0518	0.152
Metals and Metalloids							
Selenium, Dissolved	mg/L	0.173	0 0396	0.0233	0.176	0.0734	0.025
Selenium, Total	mg/L	0.166	0 0394	0.0235	0.16	0.0721	0.0239

Notes
Results presented are preliminary, and have not been validated at the time of this report.
U - Analyte not detected above the method detection limit (MDL).
J - Result is estimated.

Table 2
Field Water Quality Data

Hoopes Springs Water Treatment Plant Pilot Study
Phase 2, Performance Monitoring

		Parameter >>	Dissolved Oxygen	ORP	pH	SC	Temperature	Turbidity
		Units >>	mg/L	mV	SU	umhos/cm	C	NTU
Station	**Sample ID**	**Date**						
Week 117								
Influent	SC0520-LSSHS-IN001	5/13/2020	9.84	43	6.87	485	17.16	0.9
Ultra Filtration Backwash	SC0520-LSSHS-UFB001	5/13/2020	10.13	207	6.72	108	13.25	1.8
Effluent	SC0520-LSSHS-EF001	5/13/2020	7.74	88	7.14	504	13.2	0.6
Week 119								
Influent	SC0520-LSSHS-IN002	5/27/2020	7.71	117	6.62	522	13.51	0.4
Ultra Filtration Backwash	SC0520-LSSHS-UFB002	5/27/2020	6.61	150	6.29	242	13.19	1.4
Effluent	SC0520-LSSHS-EF002	5/27/2020	7.14	131	6.41	490	13.26	0.5

Notes: